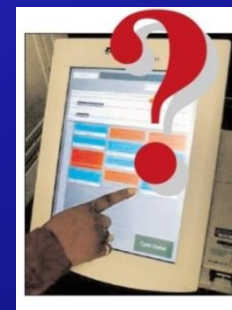


SAFE COMMISSION - VOTERGA

*Macon, Georgia
December 12, 2018*

Restoring Trust in Georgia Voting

- *Current System Opportunities - 15min*
- *New System Objectives – 10 min*



*Garland Favorito, co-founder, VoterGa, VoterGa.org
Non profit, nonpartisan, all volunteer, dues free member group*

INFORMATION TECHNOLOGY (IT) SYSTEMS DEVELOPMENT LIFE CYCLE (SDLC)

- ***Analyze Current System***
 - Current system and process improvement opportunities
- ***Define New Requirements***
 - Ballots, Election Prep, Vote Tabulation, Audits, Recounts, Transparency
- ***Evaluate Alternatives***
 - Ex: Centralized vs. decentralized election prepping security

Presentation: Intended to help commission accomplish these tasks

HOW WAS TRUST BROKEN?

2001 Law:

- *“Such voting systems [piloted] shall be required to have an independent audit trail for each vote cast.”* (O.C.G.A. 21-2-301 (b) - SB213, Act 166 - Signed Apr. 2001

Pilot Program - June – Dec. 2001 – only 1 of 7 system met law

System Purchase - May 4, 2002, contract w/ Diebold (formerly Global Elections)

2002 - Repealed 2001 Law:

- Allowed unverifiable voting SB414, Act 789 - May 9, 2002
- 0% auditability, verifiability - Undetectable vote swapping fraud and errors

Commission: Only legalize auditable, verifiable voting that can detect fraud

WHAT'S WRONG W/ CURRENT SYSTEM?

ELECTION INTEGRITY PERSPECTIVE

Verifiability: 2000- 83%, 2002 - 0%

- ***CANNOT BE VERIFIED***

- Voters cannot verify that their ballots were tabulated correctly because they cannot see the electronic record of their vote

- ***CANNOT BE AUDITED***

- Election workers cannot audit that the machine totals are correct when they certify results

- ***CANNOT BE RECOUNTED***

- No tangible ballot of record is retained for a recount so officials can only recanvass which reprints previous unverifiable results

Commission: Provide verifiable, auditable and recount capable system

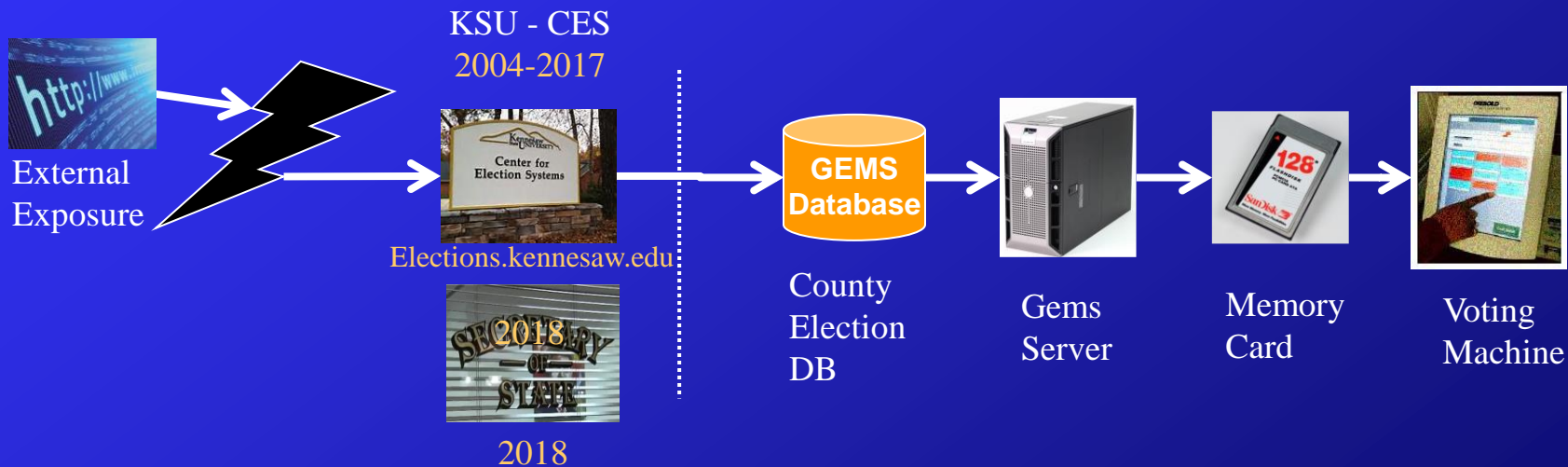
WHAT'S WRONG? STATE PERSPECTIVE

- Machines not connected to internet, no risk of external hacks
- Attacker needs physical machine access to hack an election
- Counties perform extensive Logic and Accuracy testing that would detect any hack
- No reported problems since 2002 implementation

Why the gap in perspective?

IS OUR SYSTEM VULNERABLE TO INTERNET? DOES HACKER NEED PHYSICAL ACCESS?

- Georgia elections are prepped centrally via internet (now FTP)
- Counties currently have **no** procedure to verify security of central data received



*Commission: Decentralize Election Preparation to Counties
Or Determine How to Mitigate Risk of Central **Single Point of Attack***

CAN LOGIC & ACCURACY TESTS DETECT HACKS?

- Voting Machines are tested in Test Mode and set to Election Mode for elections
- Malware can detect machine mode and count correctly in Test mode only so it is undetectable by L&A tests
- Confirmed under oath by Princeton Dr. Felton, Ga. Tech. Dr. Demillo, Mich. Prof. Halderman, KSU Prof. Britain Williams, CES Exec. Dir. King

Commission: Ensure audit procedures will protect Georgians against election day vote swapping malware

GEORGIA VOTING PROBLEMS

INVALID VOTES:

- In 2002, 3,256 test ballots were included in Cobb Co certified results
- In 2008, 947 test ballots were included in Lowndes Co. certified results
- In 2017, Fulton 6th District results accepted Roswell Runoff memory card

LOST BALLOTS:

- In 2004, two Bibb County machines in separate precincts lost over 200 votes when they could not accumulate them (Rutland 2 - 79, Howard 7 -123)

BLANK BALLOTS: (not undervotes – were votes lost?)

- In 2005, Cobb SPLOST decided by 114 votes w/ 285 blank voted ballots
- In 2011, Cobb SPLOST decided by 90 votes w/ 95 blank voted ballots

UNEXPLAINED UNDERVOTES:

- 2018 Georgia Lt. Gov. race (4% rate - 90,000 lost votes?)

OTHER SYSTEM CONCERNS

ALTERED VOTES: (no audit trail)

- In 2008, Douglas Co. Chairman and Sheriff race results changed after 25,000 Election Day ballots were altered overnight and re-entered

NEGATIVE VOTES: (vote against a candidate)

- Machines can accept negative votes (16,022, Volusia FL, Precinct 216, 2000)

FRACTIONAL VOTES: (split among candidates)

- Machines can accept fractional votes

UNITED STATES CONGRESS DIST 9 Dem			
(D)	Total		
Number of Precincts	170		
Precincts Reporting	170	100.0	%
Times Counted	81481/391941	20.8	%
Total Votes	80522.00		
STEVE COHEN	16034.31	19.91%	
WILLIE W HERENTON	64436.69	80.02%	
Write-in Votes	51	0.06%	

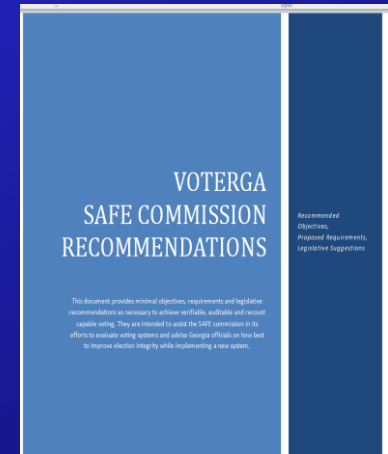
Commission: Consider prohibiting lost votes, invalid votes, negative votes, fractional votes, altered votes & blank ballots

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New System Handout Summary



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BALLOT MARKING DEVICE TYPES

One BMD in each precinct required to support disabled voters
Using electronic touchscreen to print selections on paper for scanning

■ **Unverifiable Bar Coded**

- Unverifiable votes hidden in bar codes are tabulated

■ **Verifiable Bar Coded**

- Human readable, verifiable vote marks for scanning
- Bar codes have Election Id, Precinct ID, etc.
- Increased security risk of ballot marker sending nefarious instructions to tabulator

■ **Clear** (no bar codes)

- Human readable, verifiable vote marks for scanning
- Rare (only one or two types available)

Commission: Legally Ban Unverifiable Ballot Marking Devices

POTENTIAL ALTERNATIVES

Replace all DREs w/ VVPAT DREs:

- Touchscreen used to print small font selections viewable behind glass
- Votes are tabulated from **bar codes that the voter cannot verify**
- Over **triple** initial cost of scanned hand marked ballots

Replace all DREs w BMDs

- Uses touchscreen to print selections on paper for scanning
- Many voters **don't properly verify** machine selections
- Over **triple** initial cost of scanned hand marked ballots (30,000 BMDs)

Hand Marked Scanned Ballots: (Hand Marked - Machine Tabulated)

- Paper ballots filled out and entered into one scanner per precinct (3,000 scanners)
- Saves on logistics, maintenance & testing
- Ongoing pre-printed ballot costs are higher
- On demand ballot printer in each precinct can save pre-printed costs

PROPOSED HOLISTIC OBJECTIVES

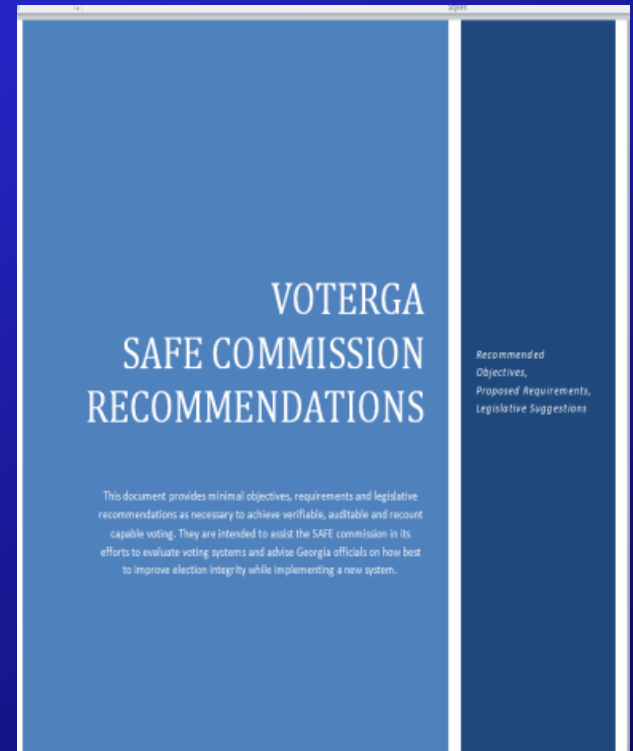
- **Ballot Standardization** – The official ballot must be a durable paper instrument with human readable vote marks in same style and appearance for all types of voting
- **Ballot Secrecy** – The system must prove it ensures voter anonymity by not linking vote records and ballot images to a voter identifier
- **Verifiable Vote Tabulation** – The system must tabulate human readable vote marks that can be verified by a voter or a disabled voter's assistant
- **Election Prep Security** – Counties must perform decentralized election preparation or have procedures to verify security of central data received
- **Auditing** – Tabulators must be verified with a public hand tally of a percentage of human readable vote marks on physical ballots according to RLA or precinct level procedures
- **Recount Tabulator Verification** – Tabulators must be verified during all recounts using a manual tally of human readable marks on physical ballots
- **Ballot Inspection Transparency** - The public must be allowed to view cast ballots under reasonable conditions set by a ballot custodian

CONSIDERATIONS TO RESTORE TRUST

*More County Election Funding & Resources Required
for Auditing, Recounting & Transparency*

NEXT STEPS:

- Refine Objectives
- Define New Requirements
 - Based on Each Objective
- Prepare Proposed Legislation
 - Based on Each Objective



VOTERGA SYSTEM RECOMMENDATIONS

- Hand marked paper ballots for max cost effectiveness and verifiability
- On demand ballot printers to reduce paper costs and admin burden
- Ballot markers that produce same style ballot for disabled voters
- Tabulators that only count human readable vote marks
- Vendors who can restore trust with respected products

